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ABSTRACT

Five pre- and postevaluations were administered to 413 therapy aides who had participated in a workplace literacy program (which 273 had completed) to upgrade their job-specific reading, writing, and oral communication skills in five New York City psychiatric hospitals. Four of the measures showed significant pre-post gain. The data were then examined to determine whether the amount of gain could be predicted by four different kinds of variables: (1) student demographics, (2) newspaper-reading practices and knowledge of current affairs, (3) number of hours of instruction, and (4) students' learning goals. The analysis showed that although there was significant pre-post gain on four of the five outcome measures, the amount of absolute gain was small. The small amount of absolute gain in combination with the relative heterogeneity of the population led to difficulty in obtaining significant predictors of gain. However, subsequent informal analysis of the data revealed that a greater amount of gain was associated with the following factors: a tendency to follow current affairs, frequency of newspaper reading, a match between the worker's learning goal and the purpose of the course, higher educational level and educational credentials, and possibly lower age and fewer years in the job. Number of hours in instruction predicted gain for only two of the outcome measures, only one of which measured actual literacy skills. The research suggested that when the sample is heterogeneous, as it typically is in the adult literacy population, small group comparisons are more promising than large group analyses. (KC)

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Relationships between Student Variables and Pre-Post Gain in a Workplace Literacy Program

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Relationships between Student Variables and Pre-Post Gain in a Workplace Literacy Program[1]

Direct care workers in five state-operated psychiatric hospitals in New York City attended a 96-hour workplace literacy course at the work site to prepare for new job tasks. The participants, whose job title was Mental Hygiene Therapy Aide (MHTA), were expanding their job functions as part of an agency-wide shift in treatment approach. The new mission, called psychiatric rehabilitation, requires that professional and paraprofessional staff work together in teams to plan and implement the rehabilitation of severely mentally ill patients. As a result of this change, therapy aides are expected to use literacy skills more than before, for example in reading and writing patient progress reports. In the study reported here, many of the therapy aides were academically underprepared for these functions although in fact most had completed secondary education and 38% had earned some college credit.

Workplace literacy instruction was provided twice a week over a six-month period in either 2- or 3-hour classes. The teachers used a custom-tailored workplace literacy curriculum which focused on job-specific reading, writing and oral communication skills. Instruction addressed areas such as job-related technical vocabulary and diagnostic terms, oral

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communication about patients' behavior, report-writing skills, and reading comprehension of treatment plans and other documents. The teachers spent the largest proportion of instructional time on writing skills, the area of greatest need. The employer provided full release time for attendance, which was voluntary. Further information regarding the program is available in Perin (1994).

Five measures were administered pre and post. Four of the measures showed significant pre-post gain. The purpose of this study was to examine whether the amount of gain could be predicted by four different kinds of variables: (1) student demographics, (2) newspaper-reading practices and knowledge of current affairs, (3) number of hours of instruction, and (4) students' learning goals, a measure that represented the number of different goals held by students upon entry to the program.

Method

Participants. A total of 465 therapy aides participated over three six-month cycles. The data analyzed in this study came from the first two cycles, in which 413 employees enrolled and which 273 (66%) completed. Seventy-five percent were women, 72% were aged 31-50, and almost all were of ethnic minority status (African-American or Hispanic). Eighty-eight percent spoke English as a primary language in childhood, and 96% currently spoke English as a primary language. Additional student background information is provided in the results section below.

Materials. Of the five pre-post measures, three were job-

specific, developed expressly for the program. The MHTA Reading Test consisted of a passage of approximately 500 words that simulated a patient treatment report, followed by 14 literal and inferential short-answer comprehension questions. Alternate forms were used so that approximately half of the participants received Form A as a pretest and Form B as a posttest, with the order reversed for the remaining participants. Different versions of the test were used in the first two instructional cycles. Only data from the first cycle are reported here.

The MHTA Writing Test required that participants write a description, intended for co-workers, of "the most difficult patient or the most interesting patient you've worked with." The writing samples were scored holistically on five dimensions: content, organization, vocabulary, language use, and mechanics.

The MHTA Self-Efficacy Scale asked the participants to rate their confidence in their ability to accomplish fifteen different job-specific literacy tasks.

The other two measures were the Test of Applied Literacy Skills (TALS), Prose section (Kirsch, Jungeblut, & Campbell, 1991) and the Tennessee Self-Concept Scale (TSCS) (Roid & Fitts, 1991).

Data on student demographics, newspaper-reading practices and knowledge of current affairs, and students' learning goals were drawn from registration forms. Student demographic variables were: (1) number of years in current job; (2) highest grade completed by age 21, (3) educational credentials (no

credential; high school diploma; General Education Development (GED) diploma; and either high school or GED diploma plus some college credits; (4) age (21-30 years, 31-40, 41-50, or 51-60); and (5) sole family provider (yes or no).

Two questions regarding frequency of newspaper-reading and knowledge of current affairs were taken from the National Adult Literacy Study (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993). Students were asked how frequently they read a newspaper in the English language. They checked one of five choices: every day, a few times a week, once a week, less than once a week, and never. They were asked to select one of four choices regarding whether they followed what is going on in government and public affairs: most of the time, some of the time, only now and then, and hardly at all.

Learning goal data were drawn from a question on the registration form that asked participants what they hoped to achieve as a result of the course. Students were asked to select all goals that applied from a choice of seven: to prepare for psychiatric rehabilitation functions; to improve in job functions in general; to improve in general academic skills, to prepare for career advancement; to prepare to enter or re-enter college; to improve academic skills in order to help children with homework; and "other." For each participant, the variable "goal" was computed by adding the number of items selected.

Number of hours in instruction were taken from the teachers' attendance rosters.

Procedure. The pretests were administered in the third week of the six-month cycle, and the posttests were administered in the week prior to the end of the cycle. Participants were informed of both pre and post scores in a confidential letter at the end of the cycle. No one else at the workplace received this information or, indeed any other information regarding individual participants' academic standing. All reporting was based on group data.

The pre and post measures were administered by the project educational coordinator, using standardized procedures. The order of test administration, verbal directions, and time allowed per test were constant.

Registration forms were completed during the first instructional session. Attendance data were recorded each session by the teachers, under the supervision of the educational coordinator.

Scoring. A research assistant scored all the tests except the MHTA Writing Test, which was scored by the educational coordinator. Answer keys were used for the MHTA Reading Test, and written criteria for holistic scoring were applied to the MHTA Writing Test. The maximum score on each of these two tests was 20 points.

Scores on the MHTA Self-Efficacy Test were obtained by adding the numbers representing the students' ratings on a 7-point scale for each of 15 questions, for a maximum total score of 105. The TALS Prose test yielded a maximum scaled score of

450. Ninety questions of the Tennessee Self-Concept Scale (TSCS) were used. Each answer consisted of a rating on a 5-point scale for a total maximum score of 450.

Data Analysis. The discrete variables (age, newspaper-reading practices, and knowledge of current affairs) were examined separately in relation to each of the five post scores, with the pre score as a covariate. The same procedure was utilized for the nominal variables educational credential and sole family provider. The continuous variables (number of years in the job, highest grade completed by age 21, goal, and number of hours in instruction) were each examined using partial correlations with the post scores, controlling for the pre score.

Most of the participants answered the question regarding frequency of newspaper-reading by selecting every day or a few times a week. For the purpose of this analysis, two categories of response were created, every day, and a few times a week or less. Similarly, most the respondents selected one of two answers for the question regarding whether they followed current affairs: most of the time or some of the time. For the purpose of the analysis, two categories were created: most of the time, and some of the time or less.

Data are missing for each of the variables studied. In some cases, a participant did not take both pre and post tests, and in other cases, certain questions on the registration forms were not answered. In other cases, attendance data are missing.

Results

Pre-Post Gains. Scores are shown in Table 1 for all students who took both pre and post tests.

Table 1. Pre and Post Scores

Test	N	Pre Mean	SD	Post Mean	SD	t
MHTA Reading	168	15.5	3.9	17.1	3.0	4.3*
MHTA Writing	181	11.1	3.6	13.5	3.3	13.6*
MHTA Self-Efficacy	188	76.7	12.5	83.4	29.1	3.2*
TALS Prose	181	293.3	37.9	290.9	37.2	-1.1
TSCS	189	344.4	34.3	353.3	33.8	3.5*

* significant pre-post difference, $p<.05$

Demographic Variables

Frequencies for the demographic variables used in this study are presented in Table 2 below.

Table 2. Demographic Variables

Variable	N	Percentage
Number of years in current job	305	
1 or below	17	5.6
2-5	72	23.6
6-10	81	26.6
More than 10	135	44.3
Highest grade completed	339	
8 or below	11	3.2
9-12	307	90.6
Above 12	21	6.2
Educational credentials	344	
No H.S. dipl. or GED	36	10.3
H.S. diploma	112	32.6
GED	60	17.4
H.S. or GED, and some college credits	129	37.5
College degree	7	2.0
Age	369	
21-30	46	12.5
31-40	129	35.0
41-50	135	36.6
51-60	59	16.0
Sole family provider	371	
Yes	268	72.2
No	103	27.8

Newspaper-Reading and Knowledge of Current Affairs

Frequencies for newspaper-reading and knowledge of current affairs are shown in Table 3 below.

Table 3. Frequency of Newspaper-Reading and Knowledge of Current Affairs

Variable	N	Percentage
Frequency of newspaper-reading	380	
Every day	222	58
A few times a week or less	158	42
Follow current affairs	374	
Most of the time	179	48
Some of the time or less	195	52

Number of Hours of Instruction

The number of hours of instruction is shown in Table 4 below.

Table 4. Hours in Instruction

Number of Hours	N	Percentage
	330	
2-40	83	25.2
41-68	81	24.5
69-80	85	25.8
81-96	81	24.5

Relation Between Amount of Gain, and Other Variables

Three significant relationships were found between the amount of literacy gain and the other variables. The number of hours spent in instruction was related to gain on the MHTA Reading Test ($r = .16$, $df = 160$, $p<.02$) and the MHTA Self-Efficacy Scale ($r= .24$, $df = 166$, $p<.001$). Self-reported knowledge of current affairs was significantly related to the MHTA Self-Efficacy Scale ($F = 4.63$, $df = 168, 1, 1$, $p<.03$).

Discussion

Although there was significant pre-post gain on four of the five outcome measures, the amount of absolute gain was small. The most robust pre-post difference was found for the MHTA Writing Test, which only yielded a mean two and one-half point gain from pre to post on a 20 point scale. The small amount of absolute gain in combination with the relative heterogeneity of the population may explain the difficulty in obtaining significant predictors of gain.

It is possible that relationships between gain and student variables were obscured when data for the whole sample were analyzed together. Subsequent informal examination of the data studied the relation of the student variables to writing scores, since writing was the area that received most instructional time and produced the strongest gain from pre to post. In order to explore further the possibility that the amount of literacy gain could be predicted by background variables, two extreme groups were created, students who showed pre-post gain on the writing

test of 5 or more points (Group A, N=14), and students who showed no change or a 1-point change, up or down, from pre to post (Group B, N=18). All students in both groups had scores of 8 to 11 on the writing pre test.

Some interesting trends were identified. The groups were alike in some ways and different in others. The two groups attended class for the same number of hours (Group A mean 78.36, SD 14.74; Group B mean 78.53, SD 9.34). Group A selected a mean of 3.79 learning goals (SD 1.74), which was similar to the mean of 4.11 (SD 1.82) for Group B. Notably, 86% of Group A included the highly specific workplace goal of improvement in psychiatric rehabilitation, the major purpose of the course, compared to only 44% for Group B.

Eighty-six percent of Group A were sole family providers, not too different from the 72% in Group B. Both groups had spent many years in the current job title, although Group B showed a higher mean (Group A mean 12.36, SD 7.46, Group B mean 16.31, SD 8.51). Forty-six percent of the employees in Group B had spent 20 or more years in the same job title, compared with 27% for Group A. Related to this finding, Group B contained a greater proportion of older workers, as shown in Table 5 below.

Table 5. Writing Scores and Age

	Group A (N=14)		Group B (N=18)	
Age	Frequency	Percentage	Frequency	Percentage
21-30	0	0	0	0
31-40	5	36	4	22
41-50	6	43	13	72
51-60	3	21	1	6

Seventy-eight percent of Group A compared with 93% of Group B held either a high school diploma or a GED. An additional 22% of Group A compared with 7% of Group B held a secondary education diploma and had also earned some college credits. Thus, Group A was a slightly better educated group. This finding is echoed by the pattern for highest grade completed. Eighteen percent of Group B had completed only 9th or 10th grade, with the remainder having completed 11th or 12th grade, while all of Group A had completed 11th or 12th grade.

The groups differed in their frequency of reading the newspaper, and their knowledge of current affairs. Seventy-two percent of Group A compared with 56% of Group B indicated that they read the newspaper every day. Further, it was particularly striking that seventy-nine percent of Group A compared with only 22% of Group B indicated that they followed government and public affairs most of the time. As stated earlier, a significant relationship was also found between following current affairs and gain on the MHTA Self-Efficacy Scale. It is possible that adult

students' level of interest in current affairs is an index or marker variable for level of success in literacy instruction.

In summary, while the large group analysis yielded few significant relationships, the exploratory comparison of "extreme" groups revealed that a greater amount of gain from pre to post was associated with a tendency to follow current affairs, frequency of newspaper-reading, a match between the worker's learning goal and the purpose of the course, higher educational level and educational credentials, and, possibly lower age and fewer years in the job title.

It is interesting that number of hours in instruction predicted gain on only two of the outcome measures, and only one of these, the MHTA Reading Test, measured actual literacy skills. Number of hours in instruction did not predict gain in writing skills, the area receiving the most attention in the classroom. Further research is warranted to discover the reasons for this pattern, since adult literacy program planners assume that participants will gain from more instruction; retention and drop out prevention are major issues in the adult literacy field.

From a methodological point of view, the findings of the current study suggest that when the sample is heterogeneous, as it typically is in the adult literacy population, small group comparisons are more promising than large group analyses.

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